In the Specification:

Amend various locations as follows:

Page 31, lines 19-25

Figures 36A through 45B illustrate a variety of embodiments of low profile, shallow speaker embodiments of the present invention that are mountable in shallow, small clearance locations. To simplify the understanding of each of these embodiments, elements in the various figures that are the same have been given the same reference number. Those elements that are modified and which perform the same or similar function ~~with~~ have the same number with the first use without a prime and for each variation one or more primes have been added to the reference number.

Page 32, lines 1-12

Figures 36 show a first embodiment low profile, overhung, shallow speaker design with Figure 36A in the unexcited position, Figure 36B in the maximum outward excursion position, and Figure 36C in the maximum inward excursion position. Included is a low profile frame or basket 402 that mounts to baffle board 400 in the installed location. Basket 402 has a bottom thickness of "H". In the bottom center of basket 402 is a typical overhung ~~magnet/ voice~~ magnet/voice coil audio motor with an upwardly extending steel doughnut with an outwardly extending flange 410 with that flange having a thickness of "T". Mounted on the flange of doughnut 410 is a circular magnet 406 having a center hole that has a larger diameter than the diameter of the upwardly extending portion of the doughnut. Magnet 406 has a thickness of 2α. On top of magnet 406 is a steel ring 408 having outer and inner diameters that are approximately the same as those diameters of magnet 406. Ring 408 also has a thickness "T".

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Additionally, there is a stiff, substantially flat diaphragm 404 with the diameter of the flat area being larger than the outer diameter of magnet 406. The outer most edge

of diaphragm 404 is shown having a "V" shaped outer edge that extends downward and away at approximately 60°, however that specific angle is not critical to the design. Diaphragm 404 is ideally made of a material such as honeycomb, thin aluminum, or other composite and non-composite light-weight materials; conventional cone materials will not work in this application since the diaphragm is substantially flat and light-weight. Diaphragm 404 is suspended with two matched surrounds: an upwardly extending flexible surround 418 having an inner edge attached to the top of the outwardly extending leg of the "V" shaped edge of the diaphragm and an outer edge attached to the top, outer most flange of basket 402; and a downwardly extending flexible surround 420 having an inner edge attached to the bottom of the inner leg of the "V" shaped edge of the diaphragm and an outer edge attached to a point within basket 402 below the top, outer most flange. With surrounds 418 and 420 mounted in this way, maximum linearity of the ~~inward-outward~~ inward/outward strokes of the speaker is achieved. Between the attachment points of surrounds 418 and 420, ventilation holes 426 have been formed around the circumference of basket 420. Attached to the lower center of diaphragm 404 is voice coil 412 that fits loosely around the upwardly extending portion of steel doughnut 410 with the upper most turn of the coil of voice coil 412 being spaced 0.5α below the inner surface of the diaphragm and the coil winding having a height of 2α in this overhung configuration. By making the height of the coil winding the same as the thickness of the magnet makes it possible to minimize the overall height of the speaker in every excited and unexcited positions of the diaphragm. With respect to each of the views of Figures 36A, 36B and 36C, and each of the embodiments discussed below, the thickness of diaphragm ~~will have~~ adds the same amount to the overall height of the speaker in each illustrated state, and since the thickness of the diaphragm can vary depending on the material used, for comparison purposes, the thickness of the diaphragm is not included in the height calculations.

Page 33, lines 17-25

Figure 36A illustrates the position of the various components of this speaker embodiment when no current is flowing through voice coil 412 ~~and~~ when the speaker is not being driven. In this position, surrounds 418, 420 are relaxed with the ~~upper~~ lower half of the coil winding ~~is~~ opposite the upper half of the magnet and the inner surface of diaphragm 404 spaced apart from the upper surface of ring 408 by a distance of a. Thus the overall height of the speaker is the spacing between diaphragm 404 and ring 408, a, plus the thickness of ring 408, T, plus the height of magnet 406, 2a, plus the thickness of the flange of 410, T, plus the thickness of the bottom of basket 402, H, for a total of 3a + 2T + H.

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In Figure 36B the speaker is in the maximum outwardly extending position with the surrounds both stretched upward and the bottom coil of the voice coil even with the upper surface of ring 408. In this position the speaker achieves the maximum height possible. Here the spacing between ring 408 and diaphragm 404 is 2.5a ~~;~~ (the height of the coil, 2a, plus the spacing of the upper most turn of the coil 0.5a from the bottom surface of the diaphragm). Thus the overall height of the speaker in this state is that 2.5a, plus the thickness of ring ~~208~~ 408 and the flange 410, each T for a total of 2T, plus the height of the magnet, 2a, plus the thickness of the bottom of the basket, H, for a total of 4.5a + 2T + H.

Page 35, line 18 through page 36, line 3

By connecting the outer most side of bladder 422 to a lower point within basket 402 that is approximately horizontally even with the underside of the outer most leg of the "V" shaped edge of the diaphragm rocking of the diaphragm during speaker operation is minimized. Bladder 422 could be manufactured by injection molding and the wall thickness could be increased as necessary to achieve the desired performance. Additionally, to reduce internal pressure that develops during extreme in/out strokes, bladder 422 can have ventilation holes around the circumference to reduce internal

pressure to allow air trapped within to leak into the space in which the speaker is mounted through ventilation holes 426. The overall height calculations for this embodiment are the same as for the first embodiment of ~~figure~~ Figure 36A.

Page 36, lines 5-26

The third overhung, low profile speaker embodiment of Figure 40 is also similar to the embodiment of Figure 36A with two modifications - the outer edge shape of the diaphragm and the inner and outer surrounds. The outer edge of diaphragm ~~404""~~ 404'" of this embodiment has two suspension points, one being an upper outwardly small "V" shaped finger 405 that is slightly below the top surface of diaphragm ~~404""~~ 404'", and a downward extending finger 407 outside the diameter of magnet 406. Downward extending finger 407 also has formed to the end thereof a small outwardly extending flange. An outwardly extending surround 418' is connected between the outer most leg of the small "V" shaped finger 405 and the top flange of basket 402, similar to surround 418 in Figure 36A. Additionally, a spider 422 is connected between the small outwardly extending flange of downwardly extending finger 407 and a point within basket 402 below the top flange and ventilation holes 426, similar to the connection point of surround 420 in Figure 36A. It should be noted that in this configuration spider 422 is mounted entirely outside the outer diameter of magnet 406, unlike the design of conventional speakers where the ~~spider cone~~ spider/cone connection is mounted directly over the magnet by a distance that is related to the desired travel of the speaker cone. With spider 422 mounted to the side of magnet 406 as in Figure 40, the additional speaker height required in a conventional speaker is eliminated thus reducing the overall height of the speaker making a low profile speaker possible. In operation, surround 418' and spider 422 perform similarly to the combination of surrounds 418 and 420 as discussed above in relation to Figures 36A, 36B and 36C. The overall height calculations for this embodiment are the same as for the first embodiment of Figure 36A.

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In this embodiment, diaphragm 404' consists of ~~to~~ two elements - a flat ridged top disk 413 and a circular enclosure 409 to the top of which top disk 413 is coupled. Circular enclosure 409 has cylindrical open interior with an inner diameter that is greater than the diameter of assembly 410, 406, 408' that opens to the opening in the basket. Through the center of bottom portion 411 of enclosure 409 is a circular hole that has a diameter substantially equal to that of voice coil 412 with the lower end thereof coupled within the bottom hole of enclosure 409. Voice coil 412 extends upward and fits loosely around the downwardly extending portion of steel doughnut 410' with the lower most turn of the coil of voice coil 412 being spaced 0.5a' above the inner surface of bottom portion 411 and the coil winding has a height of 2a' in this overhung configuration. Additionally, the inner depth of enclosure 409 is 2a'. Extending radially outward from enclosure 409 is a ring with the outer edge undercut inward shown here at approximately 45°, however the undercut angle is not critical to the operation of the speaker. The outwardly extending ring of the enclosure is coupled to the mouth of the basket by surrounds 418, 420 similar to that shown in Figure 36A.

Page 38, lines 10-20

Figure 37A illustrates the position of the various components of this speaker embodiment when no current is flowing through voice coil 412 and when the speaker is not being driven. In this position, surrounds 418, 420 are relaxed with the upper half of the voice coil winding ~~is~~ opposite the lower half of the magnet, and the inner surface of plate 413 of diaphragm 404' is spaced apart from the upper surface of the flange of 410' by a distance a'. Thus the overall height of the speaker is the distance between diaphragm 404' and the upper surface of 410', a', plus the thickness of 410', T, plus the height of magnet 406, 2a', plus the thickness of ring 408, T, plus the spacing between ring 408 and the inner surface of 411, a', plus the thickness of 411, J, plus the distance between 411 and the bottom of the basket, a', plus the thickness of the bottom of basket 402', H, for a total of $5a' + 2T + J + H$.

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In Figure 37B the speaker is in the maximum outwardly extending position with the surrounds both stretched upward, voice coil 412 ~~full~~ is fully within the inner diameter of magnet 406, and the bottom 411 of enclosure 409 is in contact with the lower surface of ring 408 being pulled into that position by the fact that voice coil 412 is connected to 411. Note that a circular groove 416 has been provided in the flange to protect the top edge of the voice coil bobbin from bottoming out with the flange. This contact between 411 and the bottom of 408 ~~is the stop~~ stops of the upward travel of diaphragm 404'. In this position the speaker achieves the maximum height possible. In this configuration the height of the speaker is the spacing between plate 413 of diaphragm 404' and 410', 2a', plus the thicknesses of 410' and ring 408, each T, plus the height of magnet 406, 2a', plus the thickness of 411, J, plus the distance between 411 and the bottom of the basket, 2a', plus the thickness of the bottom of basket 402', H, for a total of 6a' + 2T + J + H.

Page 40, line 24 through page 41, line 2

Figures 41 show a sixth embodiment of an overhung, low profile speaker of the present invention that is similar to the first embodiment shown in Figures 36. ~~the~~ The only differences between these two embodiments is in the outer edge of the diaphragm and the suspension between the diaphragm and the speaker basket. The various heights of this embodiment are the same as those of the first embodiment.

Page 41, lines 4-19

Diaphragm 404"" of this embodiment has an outer edge that is a two ~~prong~~ tine, horizontally extending fork with the upper surface of diaphragm 404"" forming a first tine 426 of the fork with the second tine 428 spaced apart from and below the first tine. In place of surrounds 418 and 420, the present embodiment utilizes a single support bladder 424 with a first mounting tab 430 extending outward for attachment to the outwardly extending flange of basket 402, and a second mounting tab 432 extending

outward on the opposite side of the bladder from tab 430. Tab 432 is sized to fit between, and be captured within, the space between tines 426 and 428 on the outer edge of diaphragm 404"". In the unexcited state of the speaker shown in Figure 41A, substantially equally sized portion of bladder 424 extend upward from basket 402 and downward into basket 402, similar to surrounds 418 and 420 in Figure 36A. It can be seen from the maximum outwardly excited state shown in Figure 41B and the maximum inwardly excited state shown in Figure 41C, that bladder 424 is stretched in the same way ~~that~~ as do surrounds 418 and 420 in Figures 36B and 36C. Thus the performance of this embodiment is substantially the same as the first embodiment of Figures 36.

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Figures 42 illustrate a first underhung, low profile speaker embodiment of the present invention. This embodiment is similar to the overhung embodiment of Figures 36 with only three changes. One change is the replacement of magnet 406 that has a height of 2α (Figures 36) with magnet 406' with a height of "~~T~~M" (Figures 42) in the same location of the structure. A second change is the replacement of steel ring 408 that has a thickness of "T" (Figures 36) with a steel ring 408' with a thickness of 2α (Figures 42). The third change is the replacement of voice coil 412 with a coil winding that is 2α high and spaced 0.5α below the underside of diaphragm 404 (Figures 36) with a voice coil 412' with a coil winding that is 0.5α high and spaced 2α below the underside of diaphragm 404 (Figures 42). With these changes the underhung, low profile speaker of Figures 42A, B and C performs in the same way as the overhung, low profile speaker of Figures ~~32A~~ 36A, B and C with the same overall heights of the speaker in each of the illustrated excitation/non-excited positions illustrated in Figures 36A, B and C and Figures 42A, B and C, respectively.

Page 42, lines 10-14

Namely, in Figure 42A the overall height is the spacing height between the under

side of diaphragm 404 and the top side of ring 408', a, plus the thickness of ring 408', 2a, plus the height of magnet 406', "M" (that is equal to "T"), plus the thickness of the flange on 414, "T", plus the thickness of the bottom of basket 402, "H", for an overall height of 3a + T + M + H which is [[=]] equal to 3a + 2T + H in Figure 36A.

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In Figure 42B the overall height is the spacing of the winding of voice coil 412' from the underside of the diaphragm, 2a, plus the height of the coil winding, 0.5a, plus the thickness of ring 408', 2a, plus the height of magnet 406', "M" (that is equal to "T"), plus the thickness of the flange on 414, "T", plus the thickness of the bottom of basket 402, "H", for an overall height of 4.5a + T + M + H which is [[=]] equal to 4.5a + 2T + H in Figure 36B.

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The voice coil assembly in the upper portion of Figure 45A includes voice coil 412" with the coil winding on a typical ~~speaker~~ voice coil bobbin. One lead wire 436 of the coil is shown extending to the top of the bobbin on the left side, while the other lead wire of the coil is shown extending to the top of the bobbin on the right side. Surrounding the top of the voice coil bobbin is a bifurcated conductive externally threaded ring 444 that is described more fully below. The left conductive half of ring 444 has lead wire 436 connected thereto, while the right conductive half of ring 444 has lead wire 438 connected thereto. Then covering the top of the bobbin is circular cap 434' that closes the center of diaphragm 434 when voice coil 412" is installed as in Figure 45B. Voice coil 412" is installed by inserting the lower end of the bobbin first through the central hole in diaphragm 434 and then screwing ring 444 into ring 446 and positioning the left half of ring 444 on the bobbin opposite the left half of ring 446 which then causes the right half of ring 444 to be in contact with the right half of ring 446. When so positioned, lead wire 436 is electrically connected, through the left half of rings 444 and 446 with wire 436 and connector 440, and similarly lead wire 438 is

electrically connected, through the right half of rings 444 and 446 with wire 438 and connector 442.

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The final step of assembly of such a speaker is the lowering of the cone/voice coil assembly to the mouth of basket 502 with the winding of the voice coil passing through the central cylinder supported by the spider with the windings of the coil extending to the magnet assembly. The cone/voice coil assembly is attached to the cylinder/spider assembly by mating the internal threads of the cylinder attached to the cone with the outer threads of the cylinder taking care to position the cone/voice coil assembly such that lead wires 522 and 524 are coupled to external connectors 510 and 508, respectively. Once the voice coil is positioned as such, the final step of assembly is the placement of the outer edge of surround 528 to the outside of the rim on the basket flange opposite the concave half circle groove 532. Then elastic ring 530 is placed around the so located outer edge of the surround to seat the edge of the surround in groove 532 and retained in that position by elastic ring.